Eniwetok

UNITED STATES
DEPARTMENT OF THE INTERIOR

DI-6

APPROVED DECEMBER 1941

K-18

Field No. 2

5 sq. = 1-inch

Scale 1-32

7579' - 7683' - Fuller sand

5 sq. = 1-inch

Boring 1-B2

757'9" – 768'3" – Fairly coarse tan cuttings; coral + moll. (many, good) some fragments of fairly large shells; [illegible] fraction [illegible]. Drilled soft but with little chatter in upper part. Mud shown getting finer – better recovery of cuttings.

768'3" – 778'9" – Drilled soft, yielding very meager cuttings, washed 2 gallon mud to get fraction of teaspoon of fine sand with some discoid forams. Small sample coarse cuttings may be mainly from previous run.

778'9" – 789'3" – Drilled soft except for two brief periods of chatter. Cuttings slow in returning – tan coral few small moll. Took bag of mud for fines

789'3" - 799'9" - Loaded easy, no chatter but cuttings coarse & more quartzose - tan coral & shell with quartzitic brown Marcellapora

799'9" - 810'3" - many fragments of wood - drills very easy - light tan coral ls. many gastropods, forams, bits of mollusk shells

810'3" - 820'9" - many wood slivers -

820'9" - 831'3"

831'3" - 841'9" Drilled in 5-10 min mud sample

841'9" - 852'3 drilled in 10 min.

852'3" - 862'9"

862'9" - 873'3"

873'3" - 883'9"

883'9" - 894'3" - very fine - took mud sample

894'3 - 904'9" -

904'9" - 915'3" X

915'3" - 925'9" X

925'9" - 936'3" X

936'3" - 946'9" X

946'9" - 957'3" X

957'3" - 967'9" — X

967'9" - 977'8"

977'8" - 988'2" —

988'2" - 998'1"

998'1" - 1008'7"

1008'7" - 1018'6"

1018'6" - 1029'00"

1029'0" - 1038'11"

2-Samples -

1) Marked FINE taken by holding cheesecloth sack to catch cuttings directly from running water into sack to rinse out mud. Cuttings varicolored, tan, white, cream very fine fragments appear as a fine well graded sand. Larger fragments have sharp angular edges & seem hard. These larger fragments may be contamination due to recirculation of mud containing cuttings from a harder, shallower zone. Organics include molluscs, corals, rare forams.

2) regular sample

0800 Pit 26.4 Hole 27.6 Air 27.2

Jan 17. 12 M. M. Russell starts shift.

Dames & Moore core was just being put down hole at Noon. Core driven about 20 inches and brought to surface at 2.45.

(13) (14) → 1038'11" - 1040'7". Dames & Moore core. recovery - 20 inches or 100%

recovery. Core put in box may be considered in 3 parts.

1) Topmost 8 inches, labelled MUD in core box. This was caught in core barrel above the regular core chamber, in that portion designed for mud and cuttings to pass out. It is probably all or nearly all drilling mud although probably grading into valid sampled material toward bottom end of this portion.

2) Portion of core retained in coring chamber. This is intact for all of its 10+ inches, although a small piece chipped out (replaced) 4 inches from top. This portion is marked CORE in box.

3) Cutter. Bottom 2 inches of this core was retained in cutting end of barrel. It is unbroken though not so perfectly as core.

Note. Dimes & more cores when good, were too large for core box & necessitated shoving plywood gasket for box.

Samples appears to be

Hill No 2

a mixture of sand & silt. The material is quite fine, probably explaining poor cutting samples of from some depths. Color when wet was steel gray, when

a mixture of sand & silt. The material is quite fine possibly explaining poor cutting samples from some depths. Color when wet was steel gray, which is thus natural color of cuttings of drilling mud awaits ~~the~~ closer examination.

Thick Discoid forams with evolved periphery, also wheatsheaf foram (miliolid?).

On the last 180 feet of pipe (~~run~~) were being lowered to resume drilling after coring 858, the kelly "bridged" 3 times * 918, making it necessary for 998 the driller to "break the bridge by starting circulation at each bridge. 180 ft 120 ft 40 ft (1038')
from bottom

A check of rods that went down with the bit is as follows.

1) 5 7/8 rock bit =	1'9"
2) 89 rods at 10'6" each. =	934'6"
3) 5 rods at 20'6 each	102'6'
	1038'9"

Thus bore hole drilling resumed

at 1038'9 and first sample run. after coring was flow. this depth 1038'9" to end of Kelly (10'4") or 1099'1"
1040'5"

1038'9 – 1049'1 (next run 1039'1 – 1049'7)

Cuttings of various size, texture, color and content. Clumps of mud which eluded washing. (Mud mixes clay & water and when dry and considerable amount of liquid was thrown into pit without adequately mixing with water). Wood (from plug of last cement job) cement (see above) and rubber (from plug). Mollusca with shells + molds, white + tan. Corals same condition. Rare forams white + tan. Sample looks as though some of every previous sample had been milled to make this one — which is probably exactly what happened in the hole. Driller reports a "hard" layer about 1 foot thick at 1045-1046.

1049'1" - 1059'7"

Cuttings more uniformly tan than last though by no means completely so. Many mollusc shells & molds. coral fragments, fibrous perous algae (?), clear calcite XLS (dog tooth spar)

1059'7" - 1070'1"

Uniformly tan, coral + mollusc - mostly coral. Gastropods, pelecypods. Still getting wood. Echinoid spine. Some extra fines mixed with sample by catching mud in bag & washing. Fines have multicolored smaller foraminifera

1070'1" - 1080'7"

mollusc - coral. Uniform tan rare white shell frags (contamination?) Many pieces of mollusc shells indicating large specimens as well as many small perfect ones.

Operculum of *Turbo*, Corals showing internal structure almost to the exclusion of external features. chuck rattled toward end of run. Shallow water Rocks

1080'7" – 1091'1"
Uniform tan, many high spired gastropods, mollusca corals about equal - rare white Halimeda.
Extra fines in glass vial. Sieve smaller foraminifera

LADD 1/14 - mid. to noon

1091'1" – 1101'7" Drilled easily but cuttings coarse + heavy - caved from higher in hole? Most of cuttings are angular fragments of tan ls with microscopic organic structure too fine to identify with low power; some small molds, some shell frag., rare white Marginopora. Corals not conspicuous.

1101'7" – 1112'1" – Drilled harder last two ft.; cuttings heavy and

contain balls of mud even after
vigorous washing - these may be
well-rounded material from
walls. As this rod was
drilled down pump stopped
for lack of gas - tools stuck
but were freed without much
? difficulty. Cuttings essentially
Lower Mio ? same as last.

1112'1" - 1122'7" - Tan ls. with larger
foram - in sample in vial
→ - lower Miocene - rare Holunda
(from above?)

1122'7" - 1133'1" - Drilled softer - Tan
→ ls. rich in larger foram -
similar to last

1133'1" - 1143'7" - Drilled "very soft - 1 or 2
rattles" - cuttings appear
finer + were less abundant
Tan foram ls. with few moll.
molds + fragments of shells

1143'7" – 1154'1" – Small stream water being added to counteract moderate loss of mud. Last 4' of the interval slightly harder. Tan foram lm. similar to last; rare white Marginopora (from above?)

1154'1" – 1164'7" – Mostly soft but with hard streaks – Tan lm. but with larger foram much less abundant

1164'7" – 1175'1" – Tan lm. with microscopic organic structure that appears obscure in artificial light. No larger forams seen but brown Textularia (few) + white Marginopora (rare) noted. Lm. appears recrystallized

1175'1" - 1185'7" - Few hard streaks near top and near bottom, rest very soft drilling. Cuttings similar to last but finer; note yellow [illegible] [illegible]

1185'7" - 1196'1" Drilled like last and cuttings also are similar. Larger foramin rare.

1196'1" - 1206'7" - Very soft, no hard streaks. Tan cuttings with few good moll. + worn foramin ([illegible] [illegible] - not a good enough of cuttings - probably missed main batch.

8:10 AM - started out of hole to remove stabilizer

- Encountered bridges 33' off bottom - 977' (another bridge at 860')

14 January Noon to Midnight
Carl Alexis

Put cuttings K-1 0-295'6" in powdered milk carton

started drilling about 12:30
18 21' lengths + 1 21' (stabilizer) on deck - took sample off bit 1206'7"

1206'7" - 1217'1" —

1217'1" - 1227'7" — tan fragments of coral, mollusks, some forams, took sample of fines, drills easy

1227'7" - 1238'1" — hit hard layer at 1230'
lost circulation about same depth
tan fragments of coral, mollusks, some forams

1238'1" - 1248'7 — drills hard - "hardest streak on any coral island" Mickle
appreciable amounts of white & light tan ls. fragments, forams, mollusks
"losing a lot of mud - must be a porous formation" Mickle

1248'7" – 1259'1" drills very hard 50 minutes white & light tan lms – fragments of coral, Halimeda several species forams, some light colored pieces ~~do not show organic origin~~ (hard crystalline limestone – few small pores –

1259'1" – 1269'7" struck softer layer 6'-7' thick – lost circulation

6" pipe has turned – probably broken off near top of hole – Turned back easily with bar – prob. worn thru by drill pipe. Pulled reds up inside 6" casing Shut down for night

Jan. 15 ~ Mon.

Mixed up 5,400 lbs of Flygel (prod) – 3 hrs of 24 sacks @ 75 lb + pumped into drill hole with bit at bottom of 6" pipe (i e 535') – earlier test had shown mat. would sink in hole + that we were connected with some cavity. Started pumping at 12:35 PM

~ 17,500 gal. water

Finished pumping final batch
about 1:30 P.M. Jan 15 &
immediately emptied two tks. of
remaining preparation. Pumped
entire batch in but failed to
plug hole. Driller (P. Nash) noted
that the fluid within the
hole neither rose nor dropped
much below tide level and
upon this deduced that mud
being pumped into hole is
being washed away as fast
as it is pumped in by
underground circulation, by
some way connected with
the ocean.

The total amount of Hyach
used in both batches was
12,500 pounds (5,400 in final
7,100 in second). Efforts to
seal cavity by this means
abandoned at 4 P.M.

6:30 P.M. Hole not disturbed
for 2½ hrs. Some pipe was
pulled and many 90 pipe showed
signs of shifting. Plan to be
at least 54 feet from surface (
10,716" (5 of long miles) feet.
Altogether removed and more
Hyach pumped in. Hole seemed
to hold fluid better but

[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible]

— hole shut down until 1/20
during search for casing &
pending arrival of mud by air lift.
Old 4" casing on Parry Isl. is
so pitted & rusted as to be worthless
except for few lengths. Total of new
4" only about 700'. Also result is
mud in rig stage condition which
preliminary plans to drill hole
on Parry during March so [illegible]

Approx. 4' [illegible] [illegible] down
by airlift 1/14 & [illegible] to get [illegible]
on 1/20. Meanwhile an attempt
is made to pull 6" casing. After
about 6 hours of pulling & hammering
string is moved 40" (casing
not broken or previously supported(
- top length or two had buckled). Abandoned
attempt to pull 6" & left string
in hole [illegible] [illegible] at 520'

Jan. 21 — Sunday
Ran down hole to 945 without
encountering any bridges; started circulation,
water & fly ash returning [illegible] [illegible]
absorbing mud. Down to 1257
& failed to get circulation back;
shut down to mix aquagel
cement (3½ - 5 lb. Aquagel

+ 150 lbs cement + 8½ gals water
Drilled cement 6½ feet, then 2 feet very fast.

Added one rod (i.e. 6') + drilled mostly soft with few hard streaks that caused chatter. Poured 15 + 18 yds aquagel cement at bottom; pulled up 252' + poured 2 buckets more (6 yds. ±) Worked up, pulled bit into 6" casing (535') + shut down for night

Jan. 22 - Mon.

Pulled all rods out of hole and measured all with tape - see sheets attached to Drilling Report. Into hole following yesterday's cement job - tried for + obtained circulation with clear water at 515' + 831' - with est. 45 % loss in each case (why so low at 515 - inside 6" casing?) On to 1270 + lost all circulation. Pumped in thick mud + sawdust, regained half (or less) water circulation for time but mud + sawdust never came back. Drilled to 1279' 8¾" at which point hole was

in cement & pulled up into 6" casing & shut down to build a 4" liner.

Jan 23 - Tues

Assembling 4" liner for liner & started from bottom to connect 6" casing

Jan 24 - Wed - to 7 AM Jan 25th

Ran in 769'8" of 4" casing (see attached sheet). Strong stuck about 26' above bottom; by pulling & working got it down to within 7 (?) of bottom - i.e. to about 12722'; pulled out, stuck with bit, built up 500 lbs. pressure - one at bottom - to be absorbed at higher levels.

Jan 25 - Thurs. (cont.)

Out of hole to remove bit; back to pick up 4"; on down to within 1 foot or less of bottom; pulled off bottom with difficulty; decided not to try further manipulation for fear of breaking old casing.

Pulled out of hole - away from 4" - rock measuring 500' 2 3/4" + bottom of casing

therefore at 1271' 6 3/4" (3½' below main casing.) Pumped in 6 sks cement — pressured back up to 300 lbs + mud came back in full return. An hour later removed rods to clean cement, pumping in 1800 gals water to counteract return & pressure - no return of circulation for 3 hrs. Later water still stood 40' below ground

Jan 26 - Fri

Water in casing at 20 ± - may indicate a seal but more probably at merely indicates that the column of fluid in the pipe is of higher gravity than that outside.

Intd to hold with test at noon - hit cement at 320' - drilled out in cement to 390' - cond. circ when circulation was lost - at 522' (below packer) Drilled in cement & drilled to 630' in cement with no return of circulation - evidently lost thru packer (previously made useless by pulling pipe up & down.

Fill No 2

13 6"

25 × 20 6½ = 500 + 13'6"

6 × 21 = 126

6396"

In with 5 7/8 bit to clean cement out of 6" casing. Make run

In with 5 7/8 bit to clean cement out of 6" casing. Make run packer cutting 1' length of 6" down to 5". Started packer in hole in early evening

Jan 27 – Saturday

Started packer at 6:30 AM. Set hole with 3 7/8 inch bit & struck cement at 639 6"

639 6
21
660 6
21
681 6
7 40/A 21
702 6"
10 05/A 21'
723' 6"
10 25/A 21'
744' 6"
10 45/A 21
765' 6"
11 05/A 21
786' 6"
11 25/A 21
807' 6"

- Losing little water through small cavity ?)

losing little water

Fill No. 2

33 lbs bottle marked red X on
1 " " " " "
1 10½ " "
1

807' 6"
21
823' 6"

	807' 6"	losing little [illegible]
11 45/A	21	
	828' 6"	~~ HAL
12 35/P	21	- losing little water - adding more from truck
	849 6"	- losing little water
1/P	21	1 20/P shut down to repair pump - loose wrist pin
	870 6	Washed out 3:50 PM
4/P	21	
	891 6	- 4 10 shut down to repair pump - 1 double & single on ground - another double pulled out

? 6:00a

6:00 - Replaced air motor-driven pump with Gardner-Denver air driven pump. Gaskets on this pump leaking had to be replaced. Dug out sediment pit

Jan 28 - Sunday Mid to Noon

0000-0345 Repaired & assembled original pump -

Fill No 2

Jan. 28 - Sunday - Mid to Noon Cont.

0350	Dbl. length marked red X in into hole

Jan. 28 - Sunday - Mid to Noon Cont.

0350	Dbl. length marked red X-ing into Hole	
0352	Dbl. length into hole Hit cement	
	891' 6"	
0355	21	
	912' 6"	losing a little water
0418	21'	
	933' 6"	
0438	21	
	954 6"	
0458	21	adding a little water to mud pit —
	975 6"	
0520	21	
	996' 6"	
0538	21	
	1017' 6"	
0603	21	
	1038' 6"	
0623	21	
	1059' 6"	
0644	21	← stopped adding water to mud pit
	1070' 6"	
0703	21	← started adding water to mud pit
	1091 6"	
	21	
0725	1112' 6"	

11

		1112 6
	0810	21
		1133' 6"
	0837	21
		1154' 6"
	0858	21
		1175' 6"
	0915	21
		1196' 6"
16	0930	21
		1217' 6"
17	0955	21
		1238 6"
18	1010	21
		1259 6"
		21
		1280 6" ← T.D.

More than
Lost ½ of circulation between 1249'0" & 1259'6"

1259' 6" - 1270' 0" Started circulating mud (aquagel) & We may have drilled thru the cement - We did - Complete loss of circulation at 1259' 6"

RIP

1058

C. Alexander

Geologists on K 1 B

9 Jan	Tue	Mid to Noon	Noon to Mid Alexis
10	Wed	Russell	Alexis
11	Thu	Russell	—
12	Fri	—	Ladd
13	Sat	Alexis	Russell
14	Sun	Ladd	Alexis
15	Mon	Russell	Ladd
—		—	—
—			—
—			—
—			—
—			—
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